

***ER 96* Staff Testimony**

**INFORMATION NEEDS IN A
COMPETITIVE ELECTRICITY MARKET**

Prepared for the July 9, 1996, ***ER 96*** Committee Hearing

Prepared by:

Melissa Jones
Electricity Resource Assessment Office

Lorenzo Kristov
Melinda Merritt
Richard Rohrer
Demand Analysis Office

Energy Forecasting and Resource Assessments Division
California Energy Commission

June 11, 1996

Disclaimer: This document is prepared by staff of the California Energy Commission as testimony in hearings for the Commission's ***1996 Electricity Report***. The views expressed are those of the authors and do not necessarily represent the views of the California Energy Commission; its commissioners, staff and management; or the State of California.

Table of Contents

	Page
<i>Introduction</i>	1
<i>Overview and Summary</i>	3
ELECTRICITY INDUSTRY RESTRUCTURING	3
ELECTRICITY MARKET STRUCTURE UNDER THE CPUC DECISION	4
ENHANCED CONSUMER CHOICE UNDER THE CALIFORNIA MARKET MODEL	6
INFORMATION IN A COMPETITIVE ELECTRICITY MARKET	7
Generation and Transmission	8
Retail Energy Services	9
Government	11
<i>Information Needs for the Restructured Electricity Market</i>	13
INFORMATION IN THE RESTRUCTURED GENERATION AND TRANSMISSION MARKETS	13
Participation in the Restructured Generation and Transmission Market	13
Information Links Between the ISO and Market Participants	14
Information From the ISO Concerning Power Flows and Status of Transmission Systems	16
Information For Suppliers About Customers	17
Information Needs for Distribution Companies	17
INFORMATION IN THE RESTRUCTURED RETAIL ENERGY SERVICES MARKETPLACE	18
Information Needs of Competing Energy Service Providers	19
Two Major Policy Problems: Comparable Access to Customer Information and Protection of Customer Privacy	20
A Need for Near-term and Long-term Solutions	21
The Elements of Comparable Access	22
Customer Proprietary and Privacy Rights	24

Table of Contents (Continued)

	Page
Information Needs of Retail Service Customers	25
Public Policy Action Items for Retail Energy Services	27
 INFORMATION NEEDS OF GOVERNMENT TO FULFILL POLICY ANALYSIS AND OVERSIGHT FUNCTIONS	 30
Roles and Functions of Government in a Restructured Marketplace.....	31
Information for Market Participants	32
Monitoring Market Performance	33
Analysis of Markets, System Operations and Trends	35
Policy Development and Analysis	37
Regulatory Oversight	39
Contingency Planning	40
ER 96 and Reform of Data Collection Regulations	40

Introduction

The **ER 96** Committee's February 15, 1996 Issues Order identifies information as crucial for a well-functioning competitive electricity market. It notes that competitive markets tend to restrict information flows among competitors and between suppliers and consumers. Further, private markets tend to under-invest in information and, in critically important markets, government frequently collects and disseminates information to assure that private market decisions are well informed. The Committee's Order posed several questions regarding information in a competitive electricity industry which Staff has attempted to address in the following testimony. In particular, the Committee asks what information is necessary in a competitive electricity market for:

- Suppliers to operate and plan efficiently
- Consumers to make informed choices
- Government to fulfill its policy analysis and regulatory oversight functions

As the California electricity market becomes more competitive, the information needs of the various market participants will change.

The pressures on the electricity industry to become more competitive began with a series of federal and state initiatives which have tended to encourage competition, at least at the generation level. But the impetus has grown stronger as an increasing number of customers have called for the opportunity to choose the party or parties from whom they purchase electricity services, as well as the types of services that best meet their needs. At both the state and federal levels the concept of functional unbundling has been widely embraced as the foundation for restructuring. The Federal Regulatory Energy Commission (FERC) has introduced functional unbundling for the wholesale electricity market through its decision on open access transmission and transmission pricing policies. At the same time, recent California Public Utilities Commission (CPUC) decisions call for functional unbundling of the electricity market into three components: generation, transmission and distribution. Under this vision of a competitive electricity market, the procurement of generation services would be open to competition, introducing price competition at the retail level.

Under the CPUC's proposed market structure, the distribution function would remain a highly bundled service provided by monopoly distribution companies. The CPUC has focused on the ability of consumers to choose their own generator or supplier through direct access to the bulk power market. However, the Energy Commission in the **1994 Electricity Report (ER 94)** has outlined a vision in which direct access is but one element of the expanded consumer choice necessary to enhance economic efficiency. This vision calls for further unbundling of a fourth component of traditional utility services: retail services. The unbundling of retail services would allow energy consumers not only to benefit from the price competition promoted through restructuring at the generation, transmission and distribution levels, but would provide consumers the benefits from competition in the service dimension by allowing them to choose customized and innovative electricity services from multiple providers, many of which are not currently available in the electricity market.

Restructuring to allow functional unbundling will bring with it specific information needs that must be addressed as we move forward in implementing a more competitive electricity market. Current market participants as well as new market entrants will need a variety of information about the new and restructured products and services which will become available in the electricity market. In addition, market players will need to have an understanding of how to meaningfully participate in

the new market institutions that evolve and take advantage of new opportunities presented by a more competitive market.

The following testimony addresses Staff's preliminary examination of information needs associated with electricity restructuring. For context, we provide an overview of electricity industry restructuring and a summary of associated information issues raised in the following testimony. The remaining sections provide a discussion of information needs in a restructured competitive marketplace for generation and transmission services, retail energy services, government and consumers.

Overview and Summary

ELECTRICITY INDUSTRY RESTRUCTURING

As the California electricity industry moves toward a more competitive market structure, the information needs of the various market participants will change. Currently, the utility market relies on distinct information needs driven to a large extent by its monopoly characteristics and the consequent regulatory policies and procedures that oversee this industry structure. Historically, electricity has been provided by vertically integrated electric companies that perform the bundled merchant and transportation function of purchasing or producing electric energy for ultimate sale to final customers subject to public regulation of pricing and operations. With policy direction leaning toward reliance on the forces of competition, a trend has emerged for unbundling the generation, transmission, distribution, and potentially the retail functions of the electric utility industry, accompanied by a move to deregulate the formerly integrated market. This will necessitate changes in the kinds of information to which the various market participants will need or want access.

The CPUC's restructuring decision¹ is a major step forward in introducing competition in the generation of electricity. We view this as an important transition step in the move to a fully competitive electricity market. However, under the CPUC's decision, the retail market functions will remain largely as they exist today. The proposed structure encompasses a much narrower vision of consumer choice for retail services than that advocated by the Energy Commission in the **ER 94** California Market Model. The CPUC decision leaves distribution as a highly bundled service under a monopoly utility distribution company (UDC), while the California Market Model would place retail services in a more competitive arena. We believe that the CPUC's proposed market structure is largely a result of its desire to focus first on introducing competition in the generation sector, where it has more experience, rather than an explicit conclusion, after examination of alternatives, that a highly bundled monopoly is the best retail market structure. We believe our efforts to identify information needs for an unbundled retail market will help enable the CPUC to take the next steps in introducing competition in retail services in its second phase of restructuring, which has already been launched.

For this reason, Staff's testimony deals with information needs for generation and transmission services consistent with the CPUC's model for a restructured electricity market. However, for the retail market, Staff has addressed information needs from the perspective of the near-term issues that need to be addressed in the CPUC decision, as well as the longer-term issues that would need to be addressed to implement the full range of consumer choices envisioned in **ER 94**. The market structure for the generation and transmission functions under the CPUC decision and for enhanced customer choice under the California Market Model are discussed below to provide the context in which information needs for a restructured electricity market should be viewed.

Most parties in the restructuring debate consider functional unbundling in terms of three components: generation, transmission and distribution. This three-fold breakdown appears adequate to implement the CPUC's decision, which retains distribution as a bundled, monopoly service. However, the California Market Model recognizes a fourth primary component to traditional utility services – retail services – which should also be included in efforts to implement functional unbundling. Unbundling retail services would recognize several important trends

¹ CPUC D.95-12-063; December 20, 1995.

emerging in the industry with respect to innovative service offerings, new technologies, and new linkages with telecommunications and other services in other states and countries.

Figure 1 shows the four-fold breakdown of functional unbundling and how it would operate under the traditional utility, the CPUC decision, and the Energy Commission's vision of Consumer Choice. Under the CPUC decision only one component of retail services would be open to competition: the procurement of generation services. Direct-access under the CPUC

FIGURE 1

Systems Overview of the Electric Industry – FUNCTIONAL UNBUNDLING				
<i>Industry Mode</i>				
<i>Function</i>		Traditional	CPUC D.95-12-	Consumer Choice
Generation	C	part of vertically-integrated franchise monopoly utility U, which combine G, T, D, F into one firm; + bypass	competitive – Power Exchange spot market + direct access + bypass incl. wholesale markets	competitive – Power Exchange spot market + direct access + bypass; incl. wholesale markets
Transmission	T	part of utility U	ISO – regulated monopoly	ISO – regulated monopoly
Distribution	D	part of utility U	UD – regulated monopoly; broad bundle of components incl. connection, delivery, reliability, metering, billing, collection, et al	WIRE – regulated monopoly; technically & economically minimal D component
Retail services customer service	F	part of utility U + DS providers working under U	competitive providers of generation services; + financial instrument + competitive efficiency providers	full retail marketplace for everything; unbundled from ISO and WIREC + new innovative + financial instrument efficiency providers
Consumers: taxpayers; citizens	C	ratepayers + public interest	customers + public interest	customers + public interest
Governance	E	legislature, regulators, control centers, reliability councils, industry associations	legislature, regulators, control centers, reliability councils, industry associations, financial market governance	legislature, regulators, control centers, reliability councils, industry associations, financial market governance
Notes				
1. Functional Unbundling should identify G, T, D and R as the four primary components of existing utility electric service.				
2. Retail R includes Direct Access providers, power marketers and brokers, new entities such as aggregators that connect C to the G-T-D- system, plus existing and new purveyors of economic substitutes for grid-supplied electricity.				

decision begins the unbundling of retail services from the distribution services, and is a major and necessary first step.² However, the California Market Model recognizes that this is a limited step and addresses only one dimension of the drive to restructure the industry: the price dimension. The Energy Commission vision for restructuring starts from the recognition of a second dimension of forces driving restructuring: the services dimension.

The following sections summarize: the structure of the electricity market under the CPUC decision; the enhanced consumer choices available under the California Market Model; and the information issues for market participants and government associated with competitive electricity generation, transmission and retail services markets.

ELECTRICITY MARKET STRUCTURE UNDER THE CPUC DECISION

On December 20, 1995, the CPUC adopted its Final Policy Decision relating to the structure of the electricity market. The CPUC's market model calls for significant restructuring at the generation and transmission levels. The Energy Commission vision of a competitive electricity market laid out in its California Market Model in *ER 94*, especially with respect to the generation and transmission functions, is consistent with the market structure the CPUC outlined in its decision. The CPUC decision recognizes that the generation of electricity is no longer a monopoly, while at the same time acknowledging that transmission and grid services still possess the characteristics of a natural monopoly.

The CPUC decision endorses a market structure that includes an Independent System Operator (ISO) which would provide open, nondiscriminatory access to transmission and grid services, as well as network coordination. It also allows for generation competition by creating a spot market for electricity through a Power Exchange (PX), and physical direct access for bilateral contract holders, both of which would be driven by market prices. Thus, utilities and regulators are currently working to establish the ISO to be responsible for providing essential network coordination and balancing services, as well as providing non-discriminatory access to transmission and network (or ancillary) services. In addition, the PX is being established to provide an open, transparent spot market for generation in which current utilities (both investor-owned and municipal utilities) and other suppliers (including in-state and out-of-state generators, aggregators, brokers and marketers) will be able to participate. Through implementation of direct access, electricity customers of investor-owned utilities will also be able to enter into contracts with independent suppliers as an alternative to receiving electricity services from their current utility providers.

Under the CPUC Final Decision, investor-owned utilities would bid all of their generation into the PX and meet the needs of all their full-services customers with purchases made from the PX during a 5-year period. Participation in the PX by other utilities and independent generators would be voluntary. Locational marginal costs would include the costs of generation losses and congestion. The locational marginal costs would set the market clearing prices for the PX and transmission-service prices for bilateral contracts. However, these prices would not be passed directly onto investor-owned utilities' end-use customers, since the decision calls for PX prices to be averaged

² The CPUC in D.96-03-022 has launched a second phase of restructuring to examine distribution function unbundling. A much narrower role for the regulated distribution company may be considered. Specific responsibilities of the regulated distribution company will be discussed along with the ground-work needed for facilitating new market entities to provide replacement functions.

for all PX customers. Finally, the potential for a 5-year phase-in of direct-access is called for with the initial year limited to 800 MW for SCE, 800 MW for PG&E and 200 MW for SDG&E. Each phase of direct access would include customers from each category.

The distribution functions under the CPUC model would remain highly bundled services provided by monopoly UDC's. Under this structure the UDC would be responsible for conducting least-cost energy procurement for its utility-service customers and providing distribution services to all its customers. The UDC would choose how much power to buy from the PX, with PX purchases considered to be regulatory "prima facie" evidence of prudent monopoly behavior. UDC's would be prohibited from entering into contracts to purchase the output of affiliated utility generation during the 5-year transition period. However, they would no longer be obligated to plan for, or provide, generation services to direct-access customers. Whether the distribution companies would serve as delivery mechanisms for public goods or public policy programs has yet to be determined.

ENHANCED CONSUMER CHOICE UNDER THE CALIFORNIA MARKET MODEL

Enhanced customer choice under the California Market Model reflects the view that electric services are not a uniform, standardized commodity. Rather, electricity constitutes a differentiated group of related services whose complexity and variation is obscured by current regulation. The current bundled electricity service provided by integrated electric utilities, or by restructured UDC's under the CPUC decision, does not provide the degree of choice necessary to allow consumption of electricity services to reach economically efficient levels. Enhanced consumer choice will necessitate the unbundling of electricity rates to allow customers to understand their choices in electricity services and prices. In addition, mechanisms will have to be developed to encourage competitive suppliers to find new, more efficient ways to provide services, as well as to provide new and different services to meet changing customer needs.

The consumer choice vision would place many of the bundled UDC services from the CPUC decision into a competitive arena. When the distribution function is viewed as a minimal common-carrier transportation service, as it would be under the California Market Model, then other UDC services including metering, billing, information services and more general customer services may be opened to competition. This would enable customers of all classes to obtain greater value from their energy services. Our vision for a restructured electricity market provides for additional and substantial unbundling and restructuring of the retail market to allow consumer choices to drive decisions about electricity products and services.

As stated in **ER 94**, the Energy Commission believes that while further restructuring of the retail market is not precluded or incompatible with the CPUC's decision, it will require a number of actions and changes not addressed, as yet, by the CPUC. Large numbers of energy consumers in all customer classes would like, and would benefit from, energy services more tailored to their specific needs. Moreover, the industry is now more capable than ever of delivering customized and innovative services. Many players in the electric services industry, including traditional utilities, energy services companies (ESCOs), and a variety of new entrants, have already recognized the service dimension of restructuring. They have been developing innovative service options to solidify or improve their competitive positions and market shares in anticipation of evolving, new competitive market structures.

Policy makers need to understand and monitor these trends and to anticipate areas where public-policy guidelines and consumer protection measures can enhance the overall societal efficiency and

fairness of electric industry restructuring. One area that requires careful and timely public policy is the area of information for retail services on both the provider and customer sides. Fair access to customer information is necessary for new firms to compete, however it also brings with it the need for consumer protections to prevent violations of privacy or intrusive marketing techniques.

While the CPUC decision acknowledges these issues, it offers no guidance on how to implement solutions. The Energy Commission is active in CPUC-sanctioned working groups to address the immediate problem of implementing restructuring in the generation sector. Only later does the CPUC plan to venture into the further unbundling of retail services. Because Energy Commission Staff are actively participating in these groups the concerns expressed in this testimony will also be raised in these working groups.

INFORMATION IN A COMPETITIVE ELECTRICITY MARKET

Information is an essential commodity in a competitive market. Reliable information that is widely available to all market participants is essential to achieving efficient outcomes. The electricity industry is complex in nature, relying on complicated legal, financial and physical arrangements. Consequently, much of the information currently available is complicated and technical. While the current level of information may be suitable, at least for some portions of the market, existing market players, new entrants, and consumers will need to have access to information that is not currently available. Fundamentally, suppliers will need information about customers and customers will need information about the different suppliers and the products available in a restructured electricity market. Information needs have been examined for the following market functions: generation and transmission systems; distribution entities, retail energy services; and, government policy analysis and oversight. A summary of the information issues associated with these market functions follows.

Because the structure for a competitive electricity market is still in the process of being developed, many of the details that would allow Staff to definitively assess whether adequate information will be supplied by market players as part of their business are not currently available. There are several areas where Staff can only speculate, at this time, on the types of information that customers and market players will need to meaningfully participate in the restructured market. This is especially true for the retail market, where current discussion and efforts are focused on the near-term implementation of the CPUC decision, rather than on a longer-term view of consumer choice.

Staff simply does not have enough specificity on the details of market institutions to assess whether the resulting restructured market will ensure that adequate, transparent and reliable information is made available to all market participants. For this reason, we believe that government has an important role to play in ensuring that information is available to assure that the emerging competitive market is both efficient and fair. At a minimum, the Energy Commission should remain actively involved in restructuring and carefully monitor restructuring activities to assure that the private markets and market institutions which evolve over the next few years provide adequate information that is both useful to market participants and provided in a cost-effective manner to all interested parties.

Generation and Transmission

As discussed, restructuring of the generation and transmission markets will result in the establishment of an ISO and PX. Suppliers of bilateral contracts will also be active participants in

this restructured market. These new institutions and market players will bring with them distinct information requirements. To a large extent, the information needs and the necessary flows of data associated with participating in these new institutions are being spelled out in utility applications to FERC. Others will need to be developed as the market structure evolves.

The most critical information needs in the generation and transmission market are for information on: the day-ahead loads to be met by generators participating in the PX and/or supplying bilateral contracts; the hourly energy market to meet unexpected load and resource conditions and to participate in the ISO's balancing market; transmission availability (including constraints) and the need for ancillary and network services to support both PX and bilateral contracts; locational spot prices and congestion charges to enable suppliers to determine whether trades will be profitable or new investment in generation or transmission are warranted; utility customers so that suppliers can tailor services; and PX and bilateral contracts to allow consumers to choose between such contracts or reliance on the PX or some combination of the two.

As the applications with FERC for the ISO and PX are processed, it will be important to assure that the information needs of the market participants are adequately considered and addressed in implementing these critical institutions. Energy Commission Staff is currently in the process evaluating the utilities applications and of using utility simulation models to address the new market structure. In addition, Staff is in the process of reviewing the applications for consistency with FERC's recent Rule 889 decision establishing the Open Access Same-Information System (OASIS) (formerly Real-Time Information Networks (RIN) to implement open, non-discriminatory transmission access. Staff also has been an active participant in Western Power Exchange (WEPEX) discussions and will continue to assist in working group efforts to assure that the needs of all market players, including information needs, are adequately addressed.

Energy Commission Staff is also engaged in the review and development of market simulation models, methods and data as analytical tools to examine how well the new competitive market is operating and whether consumers are receiving the benefits of greater efficiency. Models may be applied to the analysis of whether market power is being exerted by certain market players. These tools will play an important function in defining rules and protocols which further define market structure and practices to ensure that there is an equitable distribution of the benefits of competition among ratepayers and participants in all regions. Modeling efforts will continue to provide the analytical basis for evaluating the environmental consequences of where new powerplants and transmission lines are located. We recognize the importance of providing all stakeholders access to the information contained in and produced by models as a means of ensuring a level playing field for all market participants. Staff is currently in the process of defining the modeling assumptions and detailed information requirements to appropriately model the function of the ISO, PX and bilateral contracts. Staff recommends these efforts be continued as the competitive market unfolds.

Retail Energy Services

For consumers to realize the full range of choices that would be available in a truly competitive market, restructuring of retail energy services will require steps beyond those identified in the CPUC decision . Competing energy service providers and retail customers will require specific types of information if the marketplace is to work efficiently and fairly. Providers will need information about customers' energy use patterns to guide them in developing new products and services and in marketing these efficiently. Access to customer information is a critical element of the level playing field that will be necessary to realize the benefits of competition. The two main tasks for policy makers in enabling competitive providers to have access to customer information are to ensure a workable mechanism for comparable access by all competitors and mechanisms to

protect customer privacy. Neither of these will be provided without regulatory intervention because, first, the current custodians of customer information have no reason to want to provide it to potential competitors, and second, the tradeoff between customer privacy and the needs of the competitive marketplace is a public policy decision.

In addition, customers will need to have ready access to information about the market and about their own energy use and needs. Customers will need reliable information about the products and services available, and will need tools to help them evaluate and compare different products and services. They will need to have information that is readily understandable to enable them to be confident that they are choosing the services they really need and that they are receiving the services they have chosen and paid for. Hence they must also be able to understand their own energy requirements and service needs so they can know what to look for in the marketplace.

A good example of the difficulties customers will encounter is a basic choice to be offered under the CPUC decision: whether to continue paying a monthly average rate for electric service or get a real-time meter to take advantage of virtual direct access. A residential or small commercial customer may not be able to easily calculate the benefits likely to accrue from real-time pricing. To make a good decision would require knowledge of his own load profile, the pattern of hourly spot prices, and the cost of acquiring a more sophisticated meter. In the mature market, private competing firms may offer simple tools to enable customers to make such decisions, but in the near term policy makers will need to minimize the "burden of choice" on consumers, perhaps by actively developing and disseminating such tools to help consumers navigate the first energy choices they will face.

The CPUC decision requires that utilities establish mechanisms to allow access to their customer-specific information in a way that is fair to all competitors in generation and protects customer privacy. Although the UDC would be the primary holder of such information under the decision, a broader view of consumer choice for retail services would encompass a market for customer records in which a variety of energy service providers are willing to pay a variety of prices for data bases consisting of customer records. Energy Commission Staff have outlined a number of issues and steps that need to be taken in the near-term to implement the CPUC decision, which we consider only to be a transitional step in restructuring the retail services market. We also have identified a number of longer-term issues and actions that will need to be addressed to implement the full range of consumer choices we believe are necessary to achieve the full benefits of retail competition.

Although the CPUC decision requires utilities to make customer-specific information available, it has not outlined a regulatory framework to govern access to utility-held information, nor has it suggested standards of conduct governing the use of such information. Staff believes that developing standards of conduct is within the scope of the newly established working groups for implementing the CPUC decision, and should be pursued immediately. As a participant in these working groups, Staff is currently pressing this agenda. With respect to rules governing access to information for competitive suppliers, we recommend that a pilot program or "window of access" be created well in advance of the start of direct access on January 1, 1998. Such a pilot would specify an interim set of rules of access, plus adequate monitoring to enable regulators to evaluate the success of these rules in simultaneously assisting new market entrants while protecting the privacy of customers.

Staff believes that differing degrees of customer privacy protection should and quite easily can be implemented during this initial phase to achieve a workable balance between the objectives of facilitating competitive providers and protecting customer privacy. A relatively low level of privacy protection may be adequate for utility customer lists, which contain only customer name, address and account number, but no phone number. Such customer lists have been provided for the opening of long-distance telephone service to competition and for New Hampshire's new direct

access pilot program. More stringent procedures for obtaining customer consent must be required to release energy usage information, however, if this has customer identification and contact information attached. In either case, firms that obtain such information must agree to refrain from intrusive marketing tactics, and customers must be informed about how to complain if competitive providers violate the rules. Finally, it should be feasible to provide aggregate and customer-specific information without customer identification with little or no privacy protection provisions. For the longer-term it will be necessary for policy makers to explore a variety of regulatory and institutional frameworks to determine which arrangements can most effectively and efficiently support the information needs of a fully competitive marketplace, a marketplace that features unbundling of the distribution and retail functions to achieve expanded consumer choice. As part of the effort to realize expanded consumer choice, Energy Commission Staff in consultation with stakeholders need to identify the information flows that would characterize a fully unbundled energy services marketplace, and to assess alternative governance structures for their ability to facilitate healthy competition while protecting persons and other entities that might suffer adverse effects from the release of proprietary information.

Government

As the restructured electricity market changes from its traditional monopoly structure into a more competitive environment, the role of government with respect to electricity will also change. While regulatory oversight of costs and rate of return associated with traditional utility regulation will diminish with restructuring, the role of government in other sectors of the industry may need to be expanded and strengthened. Just as the information needs of the various market participants will change as new competitive market structures emerge, so will the information needs of government to perform its new or revised functions. Although the final structure of the electricity market has yet to be fully defined and many issues still require resolution, this testimony has identified some potential roles and activities which the Energy Commission could perform. As new structures evolve, the roles and activities of the Energy Commission, and the associated information requirements to support these, will need to be reevaluated.

During the transition to a competitive market, one role which the Energy Commission has assumed, and should continue, is to support the creation of new structures and institutions that are more responsive to market forces and consumer choices. This includes assuring that effective competition in the generation sector is facilitated through a well-operating ISO and PX, and meaningful consumer choice in the retail sector. In the transition period, the Energy Commission can play an important government role in helping to define the rules and protocols that will be necessary to prevent potential market abuses. In a mature competitive electricity market, government will have an ongoing role in preventing or alleviating market failures that may develop over time, in which the Energy Commission also will be able to provide valuable assistance. In both the transition period and once market institutions matures, the Energy Commission can assist other government agencies, including FERC and the CPUC, in providing regulatory oversight for those portions of market structures that remain monopolies.

To carry out the above functions, the Energy Commission will need to continue or initiate the collection, compilation, analysis, reporting and dissemination of information to support at least the following activities: providing information to market participants; monitoring market performance; and analysis of markets, system operations and trends.

One of the most common forms of market failures experienced in most markets is the failure of private markets to provide a socially-optimum level of information for all the players in the market. The Energy Commission can provide information for market participants which will help them to make efficient decisions about their electricity consumption and supply options. In addition, the

Energy Commission should play a role in developing and providing historical generation and consumption data, as well as supply and demand forecast information to help market participants make informed choices regarding investments in infrastructure.

In monitoring market performance, the Energy Commission will need information on the following topics and other: changes in prices for component services; changes in total energy consumption and expenditures; short-term changes and possible long-term trends in energy use patterns; indicators of market competitiveness; consumer concerns; impacts of restructuring on the California economy; market performance with respect to environmental policies; and information on market barriers, energy use, and related information on the behavior of consumers and energy service providers.

In providing analysis of markets, system operations and trends, Staff has already addressed potential changes in some of the core activities of the Energy Commission including: energy demand forecasting; energy efficiency evaluation; electricity system simulation; energy production and use data acquisition; and integration of economic and environmental concerns.³ In addition, Staff is already conducting extensive modeling of restructuring to address: economic and environmental consequences; issues of equity, efficiency and price; viability and location of new infrastructure; reliability; and making information available to stakeholder. The full extent and nature of the data and information that will be necessary to carry out these activities is still being examined through hearings, Staff workshops, and ongoing analysis.

Evaluating, implementing and monitoring public purpose programs and objectives will remain an activity of state government. The role of the Energy Commission will depend on whether the Energy Commission administers the renewable portfolio standards, or the surcharge or surcharges to fund energy efficiency activities, public goods, research and development or renewable technologies.

³ *ER 96* Testimony on: *Changes in Forecasting and Resource Assessment Activities*; H. Daniel Nix; April 19, 1996.

Information Needs For The Restructured Electricity Market

INFORMATION IN THE RESTRUCTURED GENERATION AND TRANSMISSION MARKETS

Market participants will need access to transparent and readily available information about generation and transmission in order to interact meaningfully in the wholesale electricity market. In order for the generation and transmission market described above to function, there will need to be formalized arrangements for information flow between suppliers, the PX and ISO. Some of these information requirements have been spelled out in the utilities' FERC filings. Others will need to be developed. Market participants will need accurate and reliable information about market conditions and future prospects to compete effectively in the proposed electricity market structure.

Staff's discussion of information needs for generation and transmission is based on the CPUC model, which we believe to be an important transition step in implementing a competitive electricity market. The following sections address: the manner in which various market players will participate in the restructured market to provide a context for understanding information needs; specific information flows between the ISO and the PX and other electricity suppliers; and information from the ISO concerning power flows and status of the transmission network. Information for suppliers about utility customers and information for market participants on the future electricity market are addressed in later sections of the testimony.

Participation in the Restructured Generation and Transmission Market

Participants in the restructured electricity market will include investor- and publicly-owned utilities, in-state and out-of-state generators, independent energy producers, as well as marketers, brokers and aggregators. Once the ISO, PX and direct-access market begin to function, the potential exists for longstanding barriers to competitive electricity suppliers to fall. In addition, market players should be afforded increased opportunities to participate in new and different aspects of the market. However, not all of California's utilities will necessarily participate in the PX, ISO and direct-access elements of the market immediately. Nevertheless, the underlying structure of the model is flexible enough to accommodate a range of participation from the state's private and public utilities. It will be vitally important that independent agencies monitor whether or not the market barriers to new suppliers and entrants exist or fall as a result of the creation of the ISO and PX. Experience in the United Kingdom and elsewhere suggests these analyses will be crucial to ensuring that a more competitive market does emerge. As a part of setting up this monitoring capability, Staff is proposing a number of steps to address market power issues in testimony on the implications of restructuring and to conduct modeling activities to assess the ISO, PX and bilateral contract operation in the restructured market.

Publicly-owned utilities may not be prepared to offer their customers the direct-access options that are possible under the CPUC's decision. However, these utilities could still participate in a regional wholesale generation pool and spot physical market offered by the PX in the new restructured electricity market. In addition, publicly-owned utilities could dedicate control of their transmission lines to the common, coordinated network, allowing the ISO to operate a regional network, ensuring that public utilities enjoy open, comparable access to the entire network.

Those utilities who were ready could offer their customers one or more variations of the direct-access possible under the CPUC model. Any generation supplier, regardless of ownership, would be able to offer flexible generation to the PX or ISO. If successful in the unbiased PX dispatch auction, or the ISO's balancing market, each generator would be guaranteed open access to the wholesale spot market. Utilities would pass the spot prices arising from the PX purchases through to retail consumers, under tariff rules specified by the CPUC and municipal utility boards. Independent energy producers and new market entrants would be able to participate in both the wholesale market, and the spot market to whatever degree they chose with the right to sign power contracts with anyone in either or both markets. Generation suppliers who were able to sign direct-access contracts would receive transmission-network access from the ISO without having to negotiate access with the current monopoly owners of the transmission lines.

Suppliers would have the option of scheduling their power deliveries with the ISO, subject to the ISO's objective determination of transmission availability. Alternatively, generators can offer to be dispatched at a price they choose, thus electing to be part of the PX or the ISO's balancing service and accepting the resulting spot prices. Whichever choice a generator makes, the ISO would ensure physical delivery of power to all contract consumers. The PX would pay the generator the spot price for any power it provides to the ISO and charge consumers (via distribution utility rates) for any power they receive. The contracting suppliers and consumers would then be free to settle all remaining financial differences and imbalances between themselves.

Information Links Between the ISO and Market Participants

All participants in the generation and transmission portions of the electricity market will need to have a constant flow of readily available and up-to-date information. These information flows will be essential for each of the various players, including the ISO, the PX and bilateral-contract holders, to fulfill their responsibilities and participate meaningfully in the market. The most critical forms of information for participating in the generation and transmission portions of the market will be: information on the day-ahead loads to be met by generators participating in the PX and/or supplying bilateral contracts; information on the hourly energy market to meet unexpected load and resource conditions and participate in the ISO's balancing market; information on transmission availability (including constraints) and need for network services to support both PX and bilateral contracts; information on locational spot prices, reflecting losses and congestion charges, to enable suppliers to determine whether trades will be profitable or new investment in generation and/or transmission are warranted (decisions involving substantial capital investments must be based on long-term expectations of these data, which could include intermediate-term forecasts by Staff, as discussed in a later section); information on PX and bilateral contracts to allow consumers to evaluate generation supply alternatives. One of the critical questions with respect to this information is whether critical information will be provided voluntarily by market participants. Concerns about the availability of information about bilateral contract transactions have been raised. In particular, some direct access players oppose any or all disclosure requirements for their transactions. Another question is whether the level of information for things like locational spot prices and transmission constraints which the ISO and PX will make available will be adequate and readily available (i.e., will it be too detailed or complex for market players to understand and meaningfully interpret). It may be necessary for government or quasi-government agencies to play a role in assuring that adequate information is available to market participants to assure efficient market decisions and outcomes. At a minimum, Energy Commission Staff should monitor the availability and adequacy of information from these new market institutions.

At this time, it is unclear which of the specific information exchange⁴ between the ISO and market participants will be necessary for government regulators in dealing with the monopoly elements of the generation and transmission markets. At this time, Staff believes such data would include spot prices resulting from the market. However, it is uncertain whether bid data needed by the PX and ISO for real-time operations would be necessary for government oversight.

Day-Ahead Information Between the PX and the ISO. Under the IOUs' Joint Application to FERC regarding the PX, the PX must provide the ISO with preferred least-cost hourly schedules of generation and loads for the next 24-hour scheduling period.⁵ The PX would develop these preferred schedules using the submitted energy and load bids and a mathematical algorithm to determine the constrained optimization for the 24-hour evaluation period. The PX would use computer algorithms to determine the least cost combination of generators and their merit-order ranking to meet the demand, losses, and ancillary-service requirements of the PX for the following day. The preferred schedules would include each generator's hourly energy and ancillary services commitment. These preferred schedules would represent the regulatory "must-take" resources of the IOU's, although they are not technically bid into the PX auction but are instead scheduled on a must-take basis with the ISO. Under the current proposal, the PX would not have the discretion to adjust the must-take schedules.

In addition to the preferred schedules, the PX will have to submit bid information necessary for the ISO to perform its responsibilities including information necessary to make suggestions for the redispatch of generators to relieve transmission congestion, and to perform real-time operating functions including responding to unplanned events and emergencies. The ISO will provide approved final day-ahead schedules to the PX and other parties, subject to its exercise of congestion-management and ancillary-services protocols.

Day-Ahead and Hourly Information Provided by the PX to Buyers and Sellers. As provided in the IOU's applications, the PX will need to provide the approved final schedules for generation and demand and the associated final day-ahead prices to the PX buyers and sellers on a daily basis at a specified time or as soon as the information becomes available. The final schedules will determine the financial commitments of the load and generator schedules made the day ahead.

The PX will also take generation and demand bids for use in updating the final approved day-ahead schedule to reflect changed circumstances. The PX would need to update its schedules incorporating these bids using protocols similar to those it uses to evaluate the day-ahead bids. The PX would be able to submit these updated incremental schedules to the ISO up to one hour before the start of the operating hour. The changes to the day-ahead schedules in each hour, as adjusted by the ISO to address operational constraints become binding financial commitments. Settlement information would be calculated and provided to each PX buyer and seller by the PX based on their final day-ahead schedules (and hour-ahead schedules if appropriate) approved by the ISO.

⁴ Joint Applications of Pacific Gas and Electric Company, Southern California Edison and San Diego Gas and Electric Company submitted to FERC on April 29, 1996; Docket No. ER 96-1663-000 (WEPEX Application).

⁵ CPUC Decision R.94-04-031 and I.94-04-032 (Draft) p. 42.

Information From the ISO Concerning Power Flows and Status of Transmission Systems

As the CPUC acknowledges, transparent information flow is critical to ensuring access to transmission capacity. As they point out, users of the system should have access to information regarding system status including constraints, line losses, and other related information that would be useful in operation of their facilities. It is important that the ISO make information about the system available to all market participants quickly and on a comparable basis.⁶ Market participants will also need to be aware of the ISO's day-ahead expectations regarding congestion between supply and demand locations on the grid, as well as information about the status of transmission congestion contracts.

Under the IOUs' ISO application to FERC, the ISO would provide non-discriminatory access to information concerning the status of the transmission system, including information on congested transmission paths. The IOUs propose that such transmission data be made available via a transmission system information network (TSIN), along with postings of information on accepted bids, schedules, and ancillary service-components. Under this proposal, the TSIN would be used by the ISO to communicate operating orders to the scheduling coordinators, including the PX and direct-access suppliers, in advance of actual operations and in real-time.

Information contained in these operating orders would include: notifying scheduling coordinators to stand by for non-spinning reserves, and replacement reserves; issuing start-up instructions, stating the amount of spinning reserves to be carried; requesting specific generating-unit ramping patterns; indicating which scheduling coordinators are to provide regulation and the minimum amount of unloaded capacity that must be maintained in order to meet the regulation requirements; issuing shut-down instructions; and specifying the voltage level and reactive reserve each scheduling coordinator must maintain.

The IOUs anticipate that the transmission information network would include planned facility outages that may affect grid congestion, voltage control parameters, ISO historical data for transmission constraints, and possibly forecasts of transmission constraints. The extent to which this data will meet the FERC requirement for RIN's, under the April 25, 1996 Rule 889, has yet to be addressed. The ISO would also post locational prices at all points of delivery into and out of the ISO transmission system. The differences in locations prices between point of delivery and point of receipt would provide parties with information on which paths are congested.

Information For Suppliers About Customers

The CPUC decision ordered that:

"Customer specific information necessary for the distribution functions of the utility shall be made available to all competitors in the generation sector, on terms that are fair to all competitors. All generation providers, including the monopoly utility, shall

⁶ WEPEX Application.

obtain a customer's consent before accessing any proprietary information about that customer."⁷

The decision offered no guidance, however, on how to implement this order. Implementation is being addressed by stakeholder working groups under formal CPUC sanction, initially focusing on issues relevant to suppliers in the generation sector. We discuss the implications of this directive more fully in the context of retail services markets.

Information Needs For Distribution Companies

Distribution is often seen as the relatively simple function of maintaining the wires and hardware that connect customers to the electricity system. In today's system, distribution includes the bundling of customer services such as metering and billing, service reliability, service quality, and other services, in addition to physical connection to the electrical grid.

Under the CPUC restructuring model, distribution would remain a highly bundled service under monopoly utility distribution companies (UDCs), replacing today's electric utilities as the point of contact for most customers. The responsibilities of the UDC would include: least-cost energy procurement for its utility-service customers (choosing how much power to buy from the PX) and provision of distribution services to all its customers, combined with the traditional services noted above. The UDC would retain the obligation to serve all customers who do not elect direct access service. Whether the UDC would serve as delivery mechanisms for public goods or oversee public purpose programs has yet to be determined.

The consumer choice model described in *ER 94* would place many of the bundled UDC services into a competitive arena. When the distribution function is viewed as a minimal common-carrier transportation service, then other UDC services including metering, billing, information services and more general customer services may be opened to competitive retail energy services markets. This scenario is discussed in detail in the following section.

Information needs will vary depending on how the distribution entity is defined, that is, which functions or services the distribution company is expected to provide. If narrowly defined as providing and maintaining the physical connection between customers and the electrical grid, then the information requirements are minimal. All other aspects of existing utility or proposed UDC distribution service would be provided either in competitive markets or by government. Information requirements for a well-functioning UDC would be extensive, involving some forecasting and resource procurement activities to meet the obligation to serve and plan for distribution network additions.

The UDC will be a regulated monopoly, probably under CPUC jurisdiction; information needs and necessary flows of data will be developed in subsequent proceedings. Access to customer-specific information must be addressed with the formation of the UDC.

INFORMATION IN THE RESTRUCTURED RETAIL ENERGY SERVICES MARKETPLACE

⁷ CPUC Decision D.95-12-063, dated December 20, 1996, pp. 224-225.

The theory of competitive markets and a wealth of experience in other industries demonstrate that the marketplace can deliver superior outcomes for all participants only when reliable information is widely available. Fundamentally, suppliers need information about customers and customers need information about suppliers and their products. In the energy services industry, providers need to know about consumers' energy use patterns to guide them in developing new products and in marketing these products efficiently. Access to customer information is in fact an essential element of a level playing field that will enable new firms to enter and compete with the existing utilities or their competitive affiliates. At the same time, consumers, who stand to benefit from the entry of innovative firms to the marketplace, are also seriously concerned about intrusive marketing tactics and possible violations of their privacy, as occurred in opening long-distance telephone service to competition. In addition, consumers need reliable information on products, services and providers, plus understandable tools and analyses to enable them to make meaningful comparisons and good choices among the service options.

Both the provider side and the consumer side of the new marketplace will thus raise information access issues that the market itself cannot resolve and therefore require public policy solutions. In the generation sector, for example, the CPUC explicitly noted the significant marketing advantage the incumbent utilities have by virtue of their extensive customer data bases. CPUC Decision D. 96-12-063 addresses this imbalance by ordering the implementation of rules of access to customer information in such a way as to be fair to all competitors in the generation sector and to protect customer privacy. CEC Staff are presently participating in stakeholder groups working under the auspices of the CPUC to implement the decision.

By virtue of the leading role the CEC has taken in enunciating the vision of consumer choice and the unbundling of retail energy services, combined with Staff's experience in the working groups implementing direct access, it is obvious to us that the information access problems raised by the CPUC for the generation sector will be equally relevant to retail restructuring over the next few years. The CEC is well suited, therefore, to anticipate the salient information access issues in all their complexity, to develop public policy solutions to those problems, and perhaps to play a lead role in implementing the solutions.

For public policy regarding information access to be both efficient and fair to all parties, the policy maker must look behind the desires for voluminous information expressed by specific parties, to identify the objectives and activities for which the information will be used. Once these elements are identified, the policy maker must then try to find the most efficient mechanisms for allowing information to be shared, taking into account all the costs of acquiring, processing and sharing the information as well as the safeguards required for preventing unauthorized uses and minimizing intrusive marketing practices. In case those tasks are not challenging enough, the policy maker should note, as will be expanded upon below, that many industry players are already positioning themselves for retail competition, and absent prompt public policy attention the current lack of a regulatory framework for information access may only make the problems more severe.

Information Needs of Competing Energy Service Providers

Under the present industry structure, customers receive their electric service from a regulated, integrated monopoly utility, which measures and records their consumption in order to calculate a bill for the service. Billing and certain information needs of distribution system operation are the primary uses for which customer-specific information is collected. The same information is also useful to an energy service provider for developing new products and services and for marketing. These activities are the secondary uses of customer-specific information. The problem for public

policy to address is how best to govern the secondary uses of information that has been collected for certain legitimate primary uses.

We use the term customer record to refer to the set of data associated with a given utility account number. In general such a record will include the customer's name, address and phone number, and at least one year's history of energy consumption. Although a customer record may contain a great deal more information, such as billing and payment history, participation in DSM programs, energy audits, etc., we restrict our attention to the customer identity and contact information, plus the historical record of energy consumption. We assume the customer record contains whatever information is required for the distribution utility's legitimate primary uses, i.e., accurate billing and distribution system operations. This specification allows our discussion of information access to be consistent, from the utility data bases under the present structure to whatever metering and information regime may evolve in the restructured marketplace.

The entity that collects and maintains the information is called the custodian of records (COR). Today the COR is the vertically-integrated utility. Under the CPUC decision the COR would be the UDC. In the consumer choice marketplace for retail energy services, the COR may or may not still be the distribution utility. The COR function may be performed by a single centralized entity, perhaps publicly owned and controlled, or may be performed in a decentralized fashion by diverse private metering, billing or information companies. CEC Staff understand that the COR function and its governance structure are crucial to achieving societally efficient outcomes in the restructured marketplace.

Our approach begins with the observation that customer records have economic value to energy service providers, which varies with the type of service the providers wish to offer. Thus we can think in terms of a market for customer records in which a variety of energy service providers are willing to pay a variety of prices for a data base consisting of a number of customer records. The rules governing the operation of this market, particularly the rules governing release of customer-specific information, will affect the size of the data base, i.e., the number of records included in it, the price at which the data base is offered to service providers, and the price providers are willing to pay for it.

Two Major Policy Problems: Comparable Access to Customer Information and Protection of Customer Privacy

There are two major policy problems to be addressed in this section. First is the problem of fair or comparable access to customer information. Policy makers must design and implement mechanisms whereby competing firms can obtain customer-specific information on terms that are fair to all competitors and at prices that are efficient, in order to create a level playing field for competition. Fairness requires that no special access privileges are given to any competitors, particularly those affiliated with the monopoly distribution company or whatever entity may be the COR. The potential for information sharing between the COR and its competitive affiliates means that information issues must be addressed in the standards of conduct that govern the relations between such firms. Finally, efficient pricing requires that users of customer information pay the full costs associated with making the information available for secondary uses, given that it has already been collected for the designated primary uses. All of the above are elements of creating comparable access.

The second major policy problem is protection of customer privacy. The principle of privacy is based on the premise that customers should have some right to control the secondary uses of

information that was collected for a legitimate primary use and is maintained by a responsible COR. The questions the policy maker must address are: How much control should the customer have? and, How is that control best exercised? In this context, efficient pricing requires that the cost of obtaining customer consent to release their information be passed on to the users of the information.

Some parties may argue that there is a third major policy problem to be addressed, namely, the proprietary interest of utility shareholders in the utility's customer data bases. Staff believes that this problem is encompassed by the comparable access problem. First, the CPUC has ordered that customer-specific information shall be made available on terms that are fair to all competitors in the generation sector. Thus, at least for the generation market, the decision has been made that the utility's use of customer information for marketing purposes without allowing fair access to that data would constitute an unfair advantage and thus conflict with an explicit objective of the restructuring. Second, it could be argued that the secondary use of customer information for the benefit of utility shareholders would, in effect, represent an appropriation by shareholders of an asset that was fully paid for by ratepayers. The competitive affiliates of the utilities should, like other competitive firms, be willing to pay for access to the information and those payments should be returned to ratepayers in the form of lower rates for monopoly distribution services. Finally, if policy makers determine that there is merit to the claim of shareholder rights to customer data bases, then shareholders should be compensated for losses of income, as appropriate, by the firm that purchases the information from the COR. Staff believes, however, that any incremental loss of revenue due explicitly to information release will be impossible to quantify meaningfully and probably quite small.

A Need for Near-term and Long-term Solutions

To properly frame the issues involved in making customer information available to competitive providers, we must consider information access in two phases. The first phase is now underway. It is the transition from the traditional vertically-integrated monopoly utility to a competitive marketplace for generation services, as per the CPUC decision, and for fully unbundled retail services, as described in the ER-96 the consumer choice vision. The second phase is the mature market, a more or less steady-state period that will begin when certain transitional processes have concluded.⁸

The transition phase has a compelling urgency for policy makers because, as the CPUC has rightly observed, the present circumstances offer advantages to the existing utilities that may impede the development of healthy competition.⁹ The CPUC therefore ordered, as a mitigation measure, that "customer-specific information ... be made available on terms that are fair to all competitors in the

⁸ Although it is difficult to say exactly where the transition ends and the mature market begins, especially in an industry that features rapidly-evolving technologies that do not stand still for very long, the CPUC Decision creates a fairly well-defined transition phase by specifying a number of gradual processes that will continue a few years into the next century. The Consumer Choice concept would add to their list the full implementation of common-carrier status for the distribution function and the formal unbundling of all non-operations-related services now bundled into the UDC. The conclusion of these and perhaps other regulated processes can be thought of as the end of the transition phase of industry restructuring.

⁹ CPUC Decision D. 95-12-063, dated December 20, 1995, p. 108.

generation sector." It did not, however, specify a mechanism for making the information available, nor did it suggest how to deal with the connected issue, the protection of customer privacy. At present there is no regulatory framework to enable comparable access to customer information, nor are there rules to prevent the incumbent utilities from exploiting the present regulatory void and utilizing their customer data bases to position themselves for the competitive market. In fact, many utilities are doing just that. They are using their customer data to guide development of new products and services and to target the most profitable customers for retention. The longer policy makers wait to implement fair access the more difficult it will be to level the playing field for new entrants.

The second phase may be thought of as the mature market, the Consumer Choice future we have been envisioning. In the future, the existing utilities may no longer be the custodians of customer information. If the distribution monopoly is limited to a minimal wireco that delivers electricity, then the metering and billing functions presently bundled into the UDC may be provided by competing metercos and billcos, and customer data bases may be maintained and disseminated in a decentralized fashion. After all, in most competitive industries the competing firms collect their own customer information and guard it as a trade secret. Policy makers must determine whether the energy services industry warrants special treatment in this area, and if so, what objectives and principles should guide policy making. As mentioned above, the basic problem is the governance of the custodian of records. Policy makers must explore the advantages and disadvantages of different institutional arrangements for collecting customer information, creating and maintaining customer data bases, and disseminating customer information to facilitate the desired competitive marketplace for energy services. Moreover, there must be some continuity, at least in terms of basic principles, between the near-term solution to deal with existing utility data bases and the long-term solution of access to information flows in the new retail marketplace.

The Elements of Comparable Access for the Near Term

Over the next several months, electric industry stakeholders will need to propose specific ways to implement the terms of CPUC Decision D. 95-12-063, including access to the customer data bases presently held by the integrated utilities. The solution to this near-term problem may well set precedents for future solutions to the information access problem. The decision requires that competing providers of generation services be allowed access to the utility data bases on terms that are fair to all competitors and protect customer privacy. Implementing the decision requires that we specify:

- The contents of the data records to which access will be allowed.
- Criteria that specify which entities are allowed access.
- Terms of utility compliance with competitor requests for data; including timeliness and completeness of response and data format, or establishment of an electronic bulletin board that is accessible by qualified users.
- Standards of conduct governing the sharing of customer data between the primary user of the data within the utility (i.e., the metering and billing function) and any secondary user either within the utility or affiliated with it.
- The price to be charged for access to the data. This item requires two decisions: whether to charge only for the incremental cost of providing the data or to charge additionally for the

economic value of the data; and, if economic value is charged, how the earnings should be distributed.

Because the CPUC decision refers specifically to generation providers, the data of most concern will probably be the metered load data to which customer name, address and phone number are attached. It is quite feasible, however, to facilitate competition in generation by supplying a more limited data set to competitors. For example, competitors may simply be given utility customer lists, featuring only customer name, address and account number. This approach would allow competitors to address promotional mail to customers by name and would facilitate signing them up for competitive service, with only slight incursions into customer privacy. The 1984 opening of long-distance telephone to competition and the New Hampshire direct access electric service pilot program, begun in May 1996, both used this method to initiate competition. A different alternative may be to provide aggregated data or even individual load data for which the customer is not identifiable. This alternative may not require any customer permission at all. It may not be helpful to competitors trying to decide which customers to target, but it can be extremely valuable in developing new products and service offerings.

The set of eligible generation providers may be a simple question to solve because it will be determined in other proceedings, where rules are being devised to qualify various types of providers and to govern how they must interact with the independent system operator (ISO) and the power exchange (PX). Any firm that meets the requirements for power marketers, brokers, aggregators, or any other formally recognized generation provider should be eligible for access to customer data in the near term. For the longer term, of course, the set of energy service providers will be much larger and more diverse and will require a comprehensive policy solution.

The question of standards of conduct needs to be addressed more comprehensively than just in relation to customer data. Specifically, basic principles need to be established to deal with the use of assets, which are controlled by the monopoly utility but have been paid for by ratepayers, to enhance the value to shareholders of competitive entities either internal to or affiliated with the monopoly. The CPUC decision states clearly, at least as regards customer information, that use of this data by the utility for competitive activities would give the utility an unfair competitive advantage and thus undermine the intent of the decision. The tasks at hand, then, are to devise formal standards of conduct which all parties can accept, plus some practical means for ensuring compliance with the standards.

With respect to the price of access to customer data, the CPUC decision would seem to argue for incremental cost only. If economic value is to be charged, then much additional work is required to (1) develop estimates of the economic value of customer information or devise market mechanisms to reveal such value, and (2) determine a fair allocation of the earnings that accrue under economic pricing. The decision to implement economic-value pricing should, therefore, be integrated into long-term strategies for monopoly ratemaking in the competitive marketplace. For the sake of simplicity in devising a near-term solution, it should be a simple matter to determine the extra cost involved in preparing customer data for release to competing providers, given that the data has already been collected and processed to fulfill the monopoly's metering and billing functions. As mentioned earlier, however, the incremental cost must include the cost of obtaining permission from customers to release their data. This cost will depend on the mechanism chosen to obtain customer permission, which is discussed in the following section.

Customer Proprietary and Privacy Rights

This discussion starts with the premise that customers have some right to control the secondary uses of personal information that was collected for a legitimate primary use and is maintained by a regulated entity, the (COR). There are several different ways the COR might obtain customer permission to release information. The major types are as follows, arranged from least to greatest degree of customer control.

- No customer control over secondary uses. The COR is free to release all customer records to all qualified competing firms. The cost of obtaining consent under this model is zero, since no consent is required.
- Customer notification required, with costly opt out. The COR is required to notify the customer that information will be released. The customer may be informed of a right to refuse or opt out of the information release, but with no ready mechanism provided it will be up to the customer to phone or write the COR to do this. Thus the customer's transaction cost to opt out is high. In some instances the customer may have to pay to opt out, as is required for an unlisted telephone number. The cost to the COR is simply the cost of mailing a notice to all customers, and this may be offset somewhat if there is a charge to opt out.
- Customer notification required, with low-cost opt out. The COR is required to notify the customer of the information release and to include a simple mechanism — a post-paid return postcard, for example — to allow the customer to opt out. This increases the cost to the COR of obtaining consent and will likely reduce somewhat the number of customer records that may be released.
- Explicit customer permission (opt in) required for release. In this case the COR must convince the customer that it is advantageous to opt in to the information release, which will likely be more costly than the other alternatives. If the information has economic value to competing firms, however, it may be feasible to pay customers to opt in and pass the cost of this payment on to the users of the information.

The options above, in the order stated, involve increasing cost to the COR to obtain consent, decreasing numbers of customers included in the information released, and increasing customer control over secondary uses of information. The choice of which option to implement should depend on which information is to be released. More customer control will likely be desirable for a complete usage history with customer identification than for a customer list with no usage data and no phone numbers.

Staff believes that for usage information with customer identification, the last option — explicit customer permission — is the most attractive from the customer viewpoint because it explicitly recognizes that the information has economic value and is the property of the customer. These same features make this option the least attractive from the provider viewpoint, for it means higher cost of information and fewer customer records released. We believe that this option is the most consistent with the principles of consumer choice for it embraces the concept of a market for customer information. If customers have the right to control secondary uses of their information, and if there is economic value to be derived from those secondary uses, then users of the data should be willing to pay customers to release their information. In fact, development of a market for customer information, in which customers are the suppliers, may be the most natural, efficient and fair approach to economic-value pricing of information.

There is one further mechanism which is very different from all of the above, the fulfillment house model that is widely used in the direct mail retailing industry. We discuss this mechanism in the next subsection.

Information Needs of Retail Service Customers

To support a well-functioning energy services marketplace, customers should have ready access to two categories of information. The first category is market information. Customers need to be informed about the products and services available in the market, and, they need some tools for evaluating and comparing those products and services. They also need information about service providers they are dealing with, so they can have confidence that they will actually receive what they are selecting and paying for. The second category is their own usage information. Customers should have available the means to understand their own consumption patterns and the energy requirements of their specific end uses, so that they may select products and services that most closely fit their needs.

Not all of these items must necessarily be dealt with through information provision, but it is useful to mention them all to give a complete picture of an ideal well-informed consumer. For example, consumer confidence in the marketplace may be enhanced through certification or licensing of service providers, which may be done by government or by a non-governmental trade association. Certification may be the most efficient way to filter out dishonest or incompetent providers, rather than supplying public information about the track records of providers.

In addition, many tools for analyzing the customer's specific energy needs and for selecting the appropriate products and services to meet those needs have been available for a long time from the demand-side management (DSM) industry. Very little deliberate development by government policy may be needed to expand the capabilities and availability of these analytic tools. Indeed, many industry players, including existing utilities, ESCOs and their descendants and research institutions, are developing new analysis tools to assist customers in assessing their energy needs and making improved choices in the energy services marketplace.¹⁰

At the same time, because restructuring will bring more choices to all consumers, including those who have no experience in choosing energy services and may not wish to do so, there needs to be a carefully planned program of consumer education that will allow those consumers who have little to gain from expanded choice to easily choose not to choose without being penalized, and will allow those who do stand to benefit to enter the marketplace with minimum trial and error. Public policy has important roles to play here in ensuring that adequate customer education takes place and in ensuring continued service with no penalties for customers who choose not to enter the direct access market.

Supplying information to consumers about products, services and providers, to enable consumers to seek out providers of their choice, can substitute to some extent for supplying customer information to providers to enable them to seek out customers. For the former strategy there is an effective mechanism that is native to the direct mail retail industry and has a number of advantages to recommend it to the energy services industry. One major advantage is its effective protection of consumers from disclosure of sensitive information and from intrusive marketing tactics. This mechanism is the fulfillment house.

¹⁰ For a comprehensive survey see Lynn Fryer, "Tapping the Value of Energy Use Data: New Tools and Techniques," E-Source Strategic Memo #SM-96-3, E-Source, Inc., Boulder, Colorado; March 1996.

A fulfillment house for energy services could work as follows: The energy service provider prepares promotional material on the products and services it wishes to market to a particular segment of the customer population; the provider requests a mailing list of all customers that fit a particular profile of characteristics; the COR prepares a set of mailing labels printed according to the service provider's request, and gives the labels to an independent, licensed fulfillment house; the provider supplies the promotional material to the fulfillment house, which then packages and mails the material using the labels. Under this system, the fulfillment house has no knowledge of the specific characteristics of the customers on the mailing list and is prohibited from using the list for anything beyond the single mailing that was contracted. The energy service provider does not know to which customers the promotional material was sent, but is assured that the list has met the specified parameters. The selected customers receive material in the mail, addressed to them by name, that was designed to speak to their particular usage patterns or end-use needs.

Public Policy Action Items for Retail Energy Services

For the Near-Term: (1) Access to Customer Information for Competing Providers. The CPUC Decision requires that utilities establish a mechanism to allow access to their customer-specific information in a way that is fair to all competitors in generation and protects customer privacy. Essentially, the decision is calling for a new regulatory framework to govern access to utility-held customer information by competing providers. Staff recommends that this framework include:

- Specification of the entities eligible for access to specific customer information
- Clear specification of customer privacy rights under such access, with appropriate notification requirements and privacy protection measures
- Standards of conduct for competitive firms that acquire customer information, which specify authorized and unauthorized uses of customer information
- Channels for resolution of customer complaints about intrusive marketing tactics or other violations
- Detailed procedures for utility compliance with authorized information requests, including turnaround time, format and charges
- Standards of conduct governing the use of monopoly-held information for commercial purposes by competitive divisions or affiliates of the monopoly

Examples of formal standards of conduct exist for the gas industry and may be useful in developing standards for the electric utilities. Developing such standards would appear to be within the scope of the newly-established working groups for implementing the CPUC decision, most probably within the Market Rules Subcommittee of the Direct Access Working Group.

Some parties may argue that a proper treatment of customer privacy requires full specification of customer property rights in information about their own energy consumption. Staff believes that a

complete resolution of property rights could be slow in coming¹¹ and, moreover, that even if such rights were fully specified, they would not unambiguously determine the solutions to the problems we have been discussing. In applying the ownership principles, policy makers would still need to weigh the potential societal benefits of facilitating new competition against the potential harm to customers of having their information disclosed. Finally, Staff does not see a need for a formal property rights justification to assert that customers who grant access to their own energy-usage information should benefit from the economic value of that information.

Because of the order to start direct access on January 1, 1998, Staff recommends the creation of an information-access pilot, a transitional "window of access" that could begin in January 1997 or thereabouts. A pilot could be designed around the release of three categories of information, each with a different level of privacy protection. The most protected would be usage information with customer identification, for which an explicit opt in would be required, perhaps with an incentive for customers to opt in. Least protected would be individual and aggregated usage information for which customers were not identifiable. Intermediate protection would be accorded to utility customer lists containing only name, address and account number, for which a simple notification of intent to release plus a low-cost opt out would have to be provided. During or subsequent to this pilot, it may be desirable to institute more stringent privacy protection depending on how customers are affected by the information release.

The simplest way to price information access would be to base the price only on the incremental costs of obtaining the necessary customer permission and preparing the data for delivery to the competitive provider. This approach seems most natural for the near term, although some kind of economic-value pricing developed in a market for information would be desirable for the mature energy services marketplace.

(2) Access to Reliable Market Information for Customers. Under the traditional integrated monopoly utility, most consumers did not have to make choices about their electric service. They called the utility to arrange connection, operated their electric appliances and paid their bills. Restructuring will drastically alter the traditional scenario by confronting all consumers with a new and potentially confusing array of products and services to choose from. Acquiring the information and the tools for making good choices may be extremely costly, especially for small consumers, and this fact constitutes a major threat to the success of the competitive energy services marketplace.

Although telephone service differs in important ways from electric service, experience with the opening of long-distance phone service to competition suggests some problems to anticipate and to avoid in opening electric service to competition. Many of the problems can be avoided or at least mitigated by providing consumers with reliable information and simple, practical comparison tools, to help them navigate the new array of unfamiliar services and make the most beneficial choices. For example, a common complaint is that most long-distance phone service offerings are not comparable. For competing providers, the strategy is to differentiate their services by terms and features in such a way that clear price discovery is not possible. There is no reason to expect the electric services market to be any different in this respect.

¹¹ The question of ownership of utility-held customer information was raised by the CPUC in its OII. 90-01-033, but the answers to the questions that prompted the inquiry did not seem to hinge on answering the ownership question. In fact, most respondents to the inquiry focused their comments on the practical matters at hand without ever explicitly addressing information ownership.

With the competitive generation market set to begin operating in January 1998, it is imperative that the needs of consumers for reliable information be anticipated and provided for well in advance. The problem for public policy, then, is to devise programs and mechanisms to help consumers to:

- Acquire understandable and trustworthy information about the range of energy services and products offered in the marketplace
- Assess the reliability of competing providers and their marketing claims
- Understand their own energy needs, so that they may choose the products and services that best meet those needs
- Evaluate the merits of energy efficiency measures in comparison to energy consumption

There is a natural role for the Energy Commission in providing reliable information to customers, based on its historical activities, fields of expertise and legislative mandate. The Warren-Alquist Act states that the Commission shall "Serve as a central repository within state government for the collection, retrieval and dissemination of data and information on all forms of energy supply, demand, conservation, public safety, research and related subjects."

For the Long-Term: The long-term requires a comprehensive view of information needs in a mature, competitive retail energy services marketplace. The concepts of primary uses (metering and billing for services) and secondary uses (product development and marketing) will still apply, but the COR may no longer be the distribution utility, particularly if that utility is reduced to a minimal wireco and all the associated retail activities are performed by competing firms.

The COR function, whether performed by a single entity or in a decentralized fashion, will likely need to be regulated to ensure protection of customer privacy. One possible approach would be to create a statewide information monopoly to be COR, which would collect customer data from all the independent metering and billing companies, create customer data bases, and disseminate customer information according to the regulatory framework established. Alternatively, a less centralized model may function just as well and should be explored.

There is some appeal to the idea of requiring an explicit opt-in mechanism to obtain permission to release a customer's information, for this mechanism will encourage development of a market for information that provides incentives to customers to release their data. There is also some appeal to the fulfillment house model, whereby competing firms can target specific segments of the energy-consuming population to receive customized promotional materials on their products and services, without any disclosure of customer information to those providers.

In summary, policy makers need to begin now to envision the information flows that are likely to characterize the mature energy services marketplace, and to explore the varieties of regulatory and institutional frameworks that can most efficiently support the information needs of competitive markets while protecting those persons and entities that stand to suffer adverse consequences from the release of proprietary information.

INFORMATION NEEDS OF GOVERNMENT TO FULFILL POLICY ANALYSIS AND OVERSIGHT FUNCTIONS

The essential goal of electricity restructuring is to achieve increased economic efficiency by relying on competitive market structures. Restructuring is likewise driven by the dual objectives of

lowering rates for electric power and expanding the available service options so that electric service may be tailored to customer end-use needs. The strategy for achieving these objectives is to unbundle the vertically-integrated electric utility service and facilitate competition for the unbundled components, relying on regulated monopolies only where technical or economic considerations dictate.

As restructuring initiatives become reality, new competitive market structures will emerge to replace the generation, transmission, distribution and retail functions of today's electricity utility industry. Because of the complexity of such a drastic transformation of so large an industry, success in achieving the objectives and fairness in distribution of the benefits and costs of restructuring cannot be taken for granted. In order to create and foster meaningful competitive markets, avoid market failures and potential abuses of market power, implement public policy objectives and, ultimately, to insure the continued reliability of the state's electricity system, there are multiple roles for government involving the collection, analysis and dissemination of information. Government will have a fundamental role in providing key market information to current participants and new market entrants, encouraging the development and replacement of services formerly provided by the vertically-integrated utilities. Most crucially during the transition years, careful monitoring and analysis will be needed of the activities of the various market participants and the impacts of those activities on all classes of electricity consumers, on system operations, and on public policy objectives.

This section of Staff's testimony discusses the information needed by government to perform its policy analysis and oversight roles. We focus primarily on the role, functions and attendant information needs related to Energy Commission programs and government activities now and in the future. The information needs of other government agencies, such as the CPUC, FERC, environmental regulators, are not dealt with in detail here.

At this time, Staff's perspective and discussion of this topic should not be viewed as either final or conclusive. The final structure of the electricity industry has not been fully defined and numerous issues await resolution. As the new structure emerges, changes may occur in the role of government and, hence, the information required by government to perform its functions. The **ER 96** Committee will be considering reports and testimony on several related topics and policy issues through the remainder of the **ER 96** proceeding which may present additions to or modifications of Staff's preliminary discussion of information needs of government provided here. Staff proposes that testimony and hearings for each of these subsequent policy investigations revisit or update the discussion of information needs of government specific to that policy issue; the Committee may wish to remind parties at these opportunities to include in their remarks any inferences concerning government information roles.

Roles and Functions of Government in a Restructured Marketplace

The changes now being instituted in California's electricity markets will redefine government's role in the market. Further, the role of government in the restructured electric industry will change over time, as that industry moves from its present structure through a transition period to a mature market with effective competition in the generation sector, a well-operating ISO and PX, and consumer choice in the retail sector.

During the transition period, one role of government will be to support the creation of competitive markets and to prevent or ameliorate market failures as they occur. Staff and stakeholders groups are in the process of addressing specific issues related to market structure and practices, combining microeconomic theory and knowledge of electricity systems operation to establish rules and protocols to avoid the potential for abuse of market power and allow a truly competitive electricity

market to exist. In the mature market, assuming the creation of competitive markets is complete, government will have an ongoing role in preventing and alleviating market failures that may develop over time. Government will provide continued regulatory oversight of the market structures that are not competitive (i.e., the ISO, the PX and the UDC) in both the transition period and in mature competitive markets.

Another role of government will be to oversee implementation of policies and public purpose programs related to the electric industry in order to "ensure that a reliable supply of electrical energy is maintained at a level consistent with the need for such energy for protection of public health and safety, for promotion of the general welfare, and for environmental quality protection (PRC 25001)".

It is quite possible that certain roles of government will need to be expanded in a restructured electric industry. While regulatory oversight of costs and rate of return in the competitive generation sector will diminish, the role of government in other sectors of the industry may need to be expanded and strengthened. To borrow from Robert Kuttner's open editorial in the May 20, 1996 Sacramento Bee, the role of government may need to be strengthened as watchdog to ensure that competition truly serves consumers: government will need to "monitor the experiment, collect information, set ground rules and check abuses."

As government's role is redefined in relationship to the electricity industry and competitive markets, there will be an adjustment and redefinition of the activities government must perform. Government may be expected to continue or initiate the collection, compilation, analysis, reporting and dissemination of information in support of the following activities: providing information to market participants; monitoring market performance; analysis of markets, system operations and trends; policy development and analysis (in particular, public policy programs); regulatory oversight, (e.g., siting and licensing); and contingency planning.

Information for Market Participants

Previously, we have outlined many information requirements from the perspective of participants in the generation, transmission and retail services markets. To a large extent, the information needs and necessary flows of data associated with well-functioning generation and transmission markets (ISO and PX) are being addressed in utility applications to FERC. The distinct information requirements of market players will develop as the new market structure evolves. Government can provide key market information to current players and new market entrants.

The existence of market imperfections or failures requires policy-makers to explicitly acknowledge and address a number of issues in implementing restructuring. If not explicitly addressed, market failures will inevitably lead to inefficiencies. Information is one of the primary market failures or imperfections we anticipate in the electricity industry. Information is not a free good and it can be very expensive to acquire in a complex industry such as electricity. Many players in the electricity market, especially relatively less sophisticated residential and commercial customers, may not be able to readily obtain and easily comprehend information about the restructured electricity market, yet their choices will shape electricity products and services in this market. Consequently, they may not be able to make efficient decisions about their electricity consumption and supply options. Many customers will seek to minimize the cost of information (i.e., metering and communication) systems, viewing them as additional costs and therefore something to be minimized. In actuality, customers are probably faced with some tradeoffs between the cost and complexity of information systems and the cost of generation services. Customers will be asked to pay for ISO imbalancing costs. With simple meters, there is no alternative to accepting some form of prorata allocation of imbalance costs, using crude information that simple meters can provide. More complex meters

with higher frequency of recording the time pattern of consumption allow greater precision in the allocation of ISO imbalance costs. Thus, the customer may be faced with making decisions about the relative precision of allocation of ISO imbalance costs, where the higher costs of metering and communication systems result in possibly lower customer-specific imbalance costs.

Further, private markets have little incentive to provide a socially-optimum level of information for all the players in the market and are not likely to provide adequate, clear and readily understandable information for all consumers and market participants. Information is an area in which government routinely plays a clearinghouse role in assuring that the market provides adequate information to ensure efficient market outcomes — a function private markets alone fail to provide.

Government can provide information necessary for market participants to make decisions regarding investments in energy infrastructure. In the past, utilities and regulators made decisions based on long-term forecasts of energy demand and supply (5, 12 and 20 years). However, in the future we expect increased interest by market participants in intermediate-term forecasts (3 to 7 years) consistent with modern, shorter lead-time power plant development. In addition to developing forecasts for the assessment of need for new generation, a use which may decline during restructuring, there are other functions that information about future loads will provide. One of these is forecasts of new loads and incremental additions that would be used by the UDC and other retail providers to plan improvements and additions to distribution systems and by the PX to plan improvements and additions to the transmission system. Another function would be forecasts of the total electric consumption market. This forecast could be used by all market participants in developing market plans to target the share of the total market that meets their business goals. This information will also facilitate orderly infrastructure development and help prevent the volatile up-and-down swings in prices which characterize many other competitive markets.

The Energy Commission is likely to play a unique role in the restructured electricity market in developing and providing historical generation and consumption data and supply and demand forecast information. The Energy Commission is the only State agency with authority over data collection from all parties engaged in the generation, transmission, and distribution of electricity in the state. Neither the CPUC nor FERC has such broad data acquisition authority. The Energy Commission has information on historic total consumption by customer sector and county that could be used by market participants to analyze the emerging competitive markets. Data collection that has been necessary in the past to support the development of energy demand forecasts will have additional value to generation and energy services providers (see section on Analysis of Markets, System Operations and Trends). Electricity production data and information on generation supplies and transmission network facilities will be necessary for the Energy Commission to perform market and system simulations for use by suppliers and regulators. To the extent which the Energy Commission acquires and distributes information useful to prospective market entrants and market participants, competition will be enhanced.

Monitoring Market Performance

Careful monitoring and analysis will be needed of the activities of the various industry participants and the impacts of those activities on market system operations and performance with respect to all classes of electricity consumers, most crucially during the transition years.

Just as the need for market monitoring information is increasing, however, the traditional sources of such information are shrinking. The large investor-owned utilities, under pressure to become competitive, have significantly reduced their collection of energy use data and, at the same time, have become less willing to release data they continue to collect for fear of aiding competitors. Information reported in traditional regulatory proceedings, such as FERC Form 1 filings, is being

minimized. In view of these circumstances, there will remain an ongoing, if not increased, need for the Energy Commission to collect and compile data, to develop appropriate analytic tools and models, and to report to the Governor and the Legislature on the progress and impacts of electric restructuring. Information needed to monitor market performance would include the following topics and others:

- Changes in prices for component services, with comparisons to current bundled rates, by customer class.
- Changes in total energy consumption and expenditures, by customer class.
- Short-term changes and possible long-term trends in energy end-use patterns, by customer class.
- Indicators of market competitiveness (other than market power analysis): diversity of firms and service offerings; relative competitiveness and penetration of energy efficiency measures and technology innovations.
- Consumer concerns: availability of products and services to meet specific end-use needs; adequacy of information and tools for comparing and choosing services; universal access to service; protection against intrusive marketing tactics and fraudulent marketing claims.
- Impacts of restructuring on the California economy, state-wide and by sector (selected indicators, indices).
- Market performance as regards various policy objectives, such as environmental quality.
- Information on market barriers preventing efficient energy use choices; energy use and related information describing behaviors of consumers and energy service providers.

Market Power Analysis. Government has a legitimate and well-documented role in preventing potential abuses of market power. The state's existing privately-owned electric utilities enter a competitive, restructured market environment with commanding positions. Regulators must identify and guard against opportunities the proposed market structure may offer to manipulate prices or deter entry of new competitors, particularly with respect to the interplay or market dynamics among generators in the power pool (also potential in distribution function).

Government will need information to describe market structure (market shares of generating companies and the extent to which these companies are affiliated with transmission and distribution companies) and market practices which may reflect potential abuses, combined with data reporting actual market performance. Some knowledge of bilateral contracts and other financial instruments will be needed. Information for specific contracts may be confidential, but aggregation of such information may be made publicly available and usable for monitoring market power.

Market performance includes the extent to which prices differ from marginal costs. For PX transactions this would be the extent to which market-clearing prices below marginal costs could be indicators of possible predatory pricing or existence of monopsony. Market clearing prices above marginal costs could indicate possible monopolistic restriction of output. Staff is in the process of defining information needs to address market power issues which will be discussed in later testimony.

At this time, it is not apparent that the CPUC decision fully mitigates market power concerns. A market power showing before FERC will be required as part of utility WEPEX filings on the proposed ISO and PX; these may reveal additional areas in which the exercise of market power may exist or become evident over time in generation and transmission markets. Specific information requirements to evaluate market power concerns will evolve as the utilities' applications to FERC move forward.

Analysis of Markets, System Operations and Trends

Information gathering is a commonly acknowledged function and responsibility of state government and will continue into the future competitive market. Particularly in the area of generation, government would provide access to supply and demand data. Precisely which information and how government would use it to regulate industry or markets is not yet clear, given the uncertainty of exactly which market structures will be created and how much government activity will be necessary as a result. However, there are five core Energy Commission information-based activities which relate to electricity restructuring. Each of these represents an area of current and ongoing effort which support the dual purposes of providing information and analysis to allow the Commission to meet its statutory mandates and providing timely and important input to the industry restructuring forum participants. With changes to respond to the increasingly competitive market place, these activities include:

- Energy demand forecasting,
- Energy efficiency evaluation,
- Electricity system simulation,
- Energy production and use data acquisition, and
- Integration of economic and environmental concerns.

In addition to the core activities noted above, there are other studies in progress that address specific issues related to market restructuring. Efforts are under way to develop computer-based tools to allow simulation of direct-access contracts (scheduled transaction) with the PX and ISO, so that working protocols may be developed. Other work includes developing tools to simulate regional power flows in a competitive market environment to assess inter-regional impacts. In addition, we are assessing tools to allow quantification of environmental impacts of power generation in a deregulated market — analysis which private industry has less incentive to provide. Staff are both leading and participating in many of the official and unofficial working groups related to the CPUC's restructuring initiatives.

The full extent and nature of the data and information required to perform these core and related forecasting and assessment activities cannot be specified at this time, although Staff has identified below several areas where information requirements are likely to change.

Modeling a Restructured Utility Industry. Government has relied extensively on the use of electricity system simulation and financial models to provide frameworks for evaluating complex issues and to enable informed government decision-making. Models have served useful roles in clarifying, predicting and evaluating technical and policy questions posed to regulators. The host of complex issues presented by electricity industry restructuring has heightened interest of market participants and regulators in modeling activities. Modeling restructuring has possible applications in the following areas:

- Evaluating economic and environmental consequences to the public
- Evaluating the market structure during transition years and thereafter

- Issues of equity, efficiency and price
- Identifying viability and optimal locations for new generation and transmission
- Insuring system reliability
- Making information accessible to all stakeholders

Modeling a restructured utility industry presents many technical challenges and offers tremendous potential market advantage to those who can accurately simulate market operations and performance. Energy Commission Staff conducted a technical conference on computer-based market simulation modeling on May 14 and 15, 1996, which was widely attended. Participants underscored the value of information in a competitive market, including modeling techniques and assumptions.

Information Disclosure and Access. The need for accurate and reliable data is paramount; at present, there are many unresolved issues regarding access to and disclosure of information by government. Staff have encountered significant obstacles to obtaining competitively-sensitive information needed for both supply and demand analysis. As current models are modified and new models developed, data collection requirements are altered and, in some cases, increased. The vertically-integrated utility has been the traditional source of data; the functional separation of generation, transmission and distribution will complicate, if not confound, data collection to support many applications, including model development and use. For example, data requirements for characterization of electric generation must now apply to generation companies or affiliates, not exclusively "utilities".

Staff will need to conduct on-going investigations to assess whether information disclosure and access by traditional utilities and new market entrants is adequate to meet the needs of various market players. Staff is exploring the role of government or quasi-government agencies in acquiring and aggregating demand and supply information that some market players consider to be "competitively sensitive". Staff should also begin efforts to assess the value and price of information which utilities and other market participants wish to hold confidential, in order to determine whether market mechanisms can be developed to assure access to such information.

Policy Development and Analysis

Evaluating and implementing public policy programs and objectives will remain an activity of state government, although we cannot predict with certainty how much government activity will be necessary. Presently, CPUC working groups and other industry forums are focusing on public purpose programs including energy efficiency, research and development, (R&D) renewable resources, consumer protection and education, and low-income assistance activities. While the public policy goals underlying these programs are not altered with restructuring, the structure for financially supporting and administering them is under debate. Until this is known, the scope of government activity and attendant information needs cannot be predicted. In the long run, activities will focus on evaluating these and other energy policy options compatible with a fully competitive market.

Issues related to these public purpose programs and activities are the subject of working group reports due to the CPUC in the next few months. The common goal is to provide recommendations and sufficient background on related issues to enable informed decision making. Consensus among stakeholders is variable. Energy Commission Staff are actively participating as both facilitators and advocates in the CPUC working groups. In addition, Staff and other parties will be finalizing testimony for the **ER 96** proceeding on these specific topics, to be filed later this summer.

Energy Efficiency. A draft Energy Efficiency Working Group report on energy efficiency and related public goods R&D is due to the CPUC on August 1, 1996.

The CPUC decision proposes a nonbypassable surcharge, the Public Goods Charge (PGC), on retail electricity sales to fund energy efficiency activities and public goods RD&D, and is in the process of obtaining the information upon which to define the types of energy efficiency activities to be funded through the surcharge and the appropriate level of public funding during and after the transition period. The CPUC is also exploring the details of an independent administrator of the PGC following the transition period.

The CPUC decision retains a two-track structure. Track 1 includes private market activities, “market-driven” funding mechanisms, and “customer-specific projects”. Track 2 includes activities in the “broader public interest”, including market transformation, education and possibly financial incentives. The scope and structure of the private energy efficiency industry — the type of activities or services; the mix of providers; the customers most likely to be served in private markets — requires further development and definition for full implementation. Likewise, the impact of restructuring on existing public interest energy efficiency programs and the identification of new activities that may be funded by the PGC (or otherwise publicly-funded) is not complete. The information requirements for private industry or public interest energy efficiency program efforts, including the information needs of government in this area, will not be specified for some time; however, many of the observations and distinctions discussed in the previous section on retail energy services are applicable.

Some of the types of information that will be needed include: market conditions and barriers to energy efficiency; analysis of costs and benefits of new technologies, including public goods R&D and behavioral research; provision of information for consumer assistance and protection (education, equipment labels, efficiency ratings, contractor certifications, etc.); measurement and evaluation systems to identify “successful” PGC programs. Historical DSM program expenditure data could be used to help develop initial PGC funding levels. Continued collection of customer energy use data and data of both publicly-funded and private industry program and technology costs, characteristics and level of market penetration will be useful in establishing future funding levels to meet state goals. Once the governance of the PGC is determined, the administrator is selected and its role established, specific information needs can be assessed. Presently, several alternative proposals for administering the energy efficiency PGC funds, with varying implications for information gathering, analysis and dissemination.

Additional data and analyses needed to support the state’s energy efficiency goals are discussed at the end of this report. Staff notes that there are overlaps in the types and sources of information identified to serve the needs of different government for policy analysis and oversight functions.

RD&D. A RD&D Working Group report is due to the CPUC on September 1, 1996.

The CPUC decision calls for collection of PGC funds for public goods RD&D research, to be administered by an independent, non-utility entity. Information on how to develop reliable cost estimates for public good RD&D is critical and will be among the information needs of the independent administrator. The Energy Commission retains its ongoing interest in ways to preserve and enhance technological innovation in a restructured electricity market. Both the **ER 96** and **RD&D** Committees are focused on the development and implementation of policies that may stimulate technological innovation and modernize California's electricity system, including the benefits of increased efficiency, reduced emissions and improved customer service.

Staff is confident that the RD&D Working Group report and joint **ER 96** and **RD&D** Committee workshop will expand all parties understanding of trends, factors and information needs relevant to technological innovation in the electricity industry. At this time, Staff expects a continued need for data collection and analysis of: the nature and characteristics of public goods RD&D, including commercialization opportunities; institutional or market barriers that may prevent or inhibit certain types of energy technology RD&D; the private and societal costs and benefits of energy technologies. Beyond the present need for information to thoroughly evaluate and compare the alternative proposals being considered within the framework of the RD&D Working Group, it will be necessary to monitor the implementation and effectiveness of the policies once they are put in place, in particular, monitoring of projects receiving PGC funding.

Renewables. The Renewables Working Group has requested a time extension for filing final report to the CPUC from July 1 to August 1, 1996.

Several proposals to implement the CPUC decision regarding a minimum renewables purchase requirement have been submitted to the Renewables Working Group, reflecting different views and approaches to realizing the continued development, cost improvement and commercialization of renewable energy technologies. Hopefully, the CPUC can reach closure with stakeholders on the issues involved, through the working group process, implementation activities and coordination with the Legislature.

Among the information needs to support a common understanding of the renewable energy market are: present and projected levelized costs for renewable energy technologies; the value of renewables within California's energy system, from a societal and private market perspective; market barriers to successful competition of renewables within California's energy market.

The costs, benefits and implementation details of alternative "renewables portfolio standards proposals are currently being evaluated by the Renewables Working Group and other industry groups. Assuming a renewables portfolio standard policy is adopted, government will have an oversight (monitoring) role to ensure that an active and adequately-sized market for renewables functions. Staff expects that the Energy Commission's ongoing efforts to gather and analyze information about energy technology costs, characteristics and market penetration, will serve the both the needs of government and private markets.

Regulatory Oversight

Staff expects that remaining monopoly functions (ISO, PX, UDC) will be overseen principally by regulatory entities other than the Energy Commission. Regulators may rely on Energy Commission data collection and analysis to support regulatory activities, in particular, information regarding analysis of markets, system operations and trends.

Power Plant Siting and Licensing. In *ER 94*, the Energy Commission revised its need conformance criteria applied in power plant certification proceedings, acknowledging new classes of power plants (merchant plants) emerging from a competitive market structure. In a market setting, the question of economic justification for a specific power facility becomes less important as the economic justification shifts from a regulatory environment to one in which interactions between buyer and seller determine investment decisions. To the extent that ratepayers are no longer liable for investment decisions in new generation supplies, government oversight would be limited to those factors that markets do not internalize in their decision making, such as environmental impacts and the evaluation of the impacts of market performance on the state's resources, public policy goals, and system reliability.

In the future, the focus, of need assessment will reflect a more statewide and broad service area balancing of supply demand, system reliability and adequacy of supplies. Staff will be filing further testimony on the role of government in assessing the need for power facilities, the integrated assessment of need and proposed need conformance criteria for the pendency of *ER 96*.

Contingency Planning

Increased competition in the electric industry may lead to increased volatility in prices. Government needs to have the capability to monitor price movements to ensure that no abuse of market power, such as predatory pricing, is occurring and to be able to inform the public of the reasons for those movements. In order to monitor and analyze price movements, government would need to be able to collect information and data on the status and prices of generators and the status and prices of electricity imports, presumably collected by the ISO or PX. The timely dissemination of this information can add knowledge and certainty about the exact nature, extent causes of sudden or untoward events as they occur, information which competitors in the industry can individually passess nor convincingly reveal. Sometimes the underlying causes of rapid price increases have been laid for many years; a role for government, because the private market is myopically focused on the short run, is to keep an eye on the long-term implications of today's competitive actions and to report on and ameliorate expected adverse impacts.

***ER 96* and Reform of Data Collection Regulations**

In its February 15, 1996 Order, the *ER 96* Committee noted that the information needs of government included, but was not limited to, consideration of changes to the Commission's data collection regulations (Title 20, California Code of Regulations, Sections 1301 - 1371), as described in the "Regulatory Review Proposal" adopted by the Commission on January 17, 1996. This Proposal was the result of the Commission's comprehensive evaluation of its regulations for the Governor's Regulatory Review Working Group. In its January 17, 1996 Order, the Commission stated that the review of the data collection regulations in light of electric industry restructuring is a proper subject for the *1996 Electricity Report* proceeding. The data collection regulations that are associated with the electricity industry are:

- Quarterly Fuel and Energy Reports: Sections 1301-1313
- Data Collection and Analyses Plans: Section 1344
- Demand Forecasts: Section 1345
- Resource Plans: Section 1347
- Pricing and Financial Information: Section 1348

Summary of Prior Proposed Modifications. In its evaluation of regulations for the Governor's Regulatory Review Working Group, the Commission received several proposals from utilities to repeal or modify all or particular sections of Chapter 3 on Data Collection. The proposals, for example, call for the elimination of the distinction between utilities and other entities, the repeal of section 1304(b)(2) on the grounds that it duplicates information provided to other agencies and the repeal of sections 1308 (Projections) and 1313 (Accuracy Report) on the grounds that forecasting and consumption information will be proprietary in a restructured, competitive electricity industry. Other proposals advocated the repeal of the biennial forecast of energy loads and resource provisions (sections 1340-1352) on the grounds that they will be outdated in a restructured industry. In addition, some proposals suggested that sections 1345 and 1348 should be amended so that Energy Commission Staff, rather than utilities, prepare demand and price forecasts on the grounds that this will eliminate duplication and that section 1347 (resource plans) be repealed on the grounds that traditional utility resource planning has come to a halt due to industry restructuring. Concerns were also raised about the Commission's process for designating information as confidential.

Staff Recommendations. Staff believes, because of the on-going examination of issues in *ER 96* and the unsettled nature of the final form of industry restructuring, that it is premature to attempt a complete description of changes or modifications to the existing data collection regulations. For consumption, generation and transmission data, the Energy Commission should be primarily an information clearinghouse. The Energy Commission is particularly suited for this role because of its historic emphasis on data collection. Other Energy Commission information collection roles will depend on whether the Energy Commission administers the renewable portfolio standard (RPS), or the surcharge or surcharges to finance energy efficiency, RD&D and renewables. Industry should be expected to provide the data needed to administer these programs. To the extent that an applicant for such funds might not provide the necessary data, the applicant might not be eligible for such funds; in effect, such funds would be a form of payment for the data, as well as for the specific programs. Staff proposes that a formal process for the revision of data collection regulations should grow out of the findings of the *ER 96* process. Although Staff is not proposing specific changes to the data collection regulations in this testimony, Staff does believe that there are certain broad areas where changes or modifications may be required. These include:

- The definition of an electric utility
- Confidentiality
- Changes to the forecast process
- Data surveys
- Contingency planning

Because of changes to the vertically integrated structure of existing electric utilities and because of new types of firms providing previously bundled services, the definition of an electric utility in the data collection regulations will have to be changed. The definition will have to be broad enough to encompass all of the market participants that will be required to provide consumption, generation and customer characteristics data to government.

As the electricity industry becomes more competitive, individual firms will want to prevent disclosure of certain information that could put them at a competitive disadvantage vis-a-vis their competitors. This information would include customer consumption and energy use characteristics and prices charged to consumers. This information is essential for government to fulfill its role of monitoring the emerging competitive market. In order to address market participant fears about the release of trade secret information and, at the same time, ensure that government receives

information vital to its monitoring function, the confidentiality provisions in the Commissions's regulations need to be discussed. The public good of being able to monitor the emerging restructured electricity markets may override the public good of access to detailed information. The discussion of confidentiality must also include discussion of the level of aggregation of data that can and should be made public.

As restructuring progresses, the electricity industry will become more fragmented and the new participants may not have the resources to develop demand forecasts. At the same time, market participants may not want to divulge their views of future market trends. This fragmentation of the industry will decrease the possibility of acquiring statewide forecasts and the reluctance of utilities to provide forecasts means that the data collection regulations may need to be changed so that utilities are not required to provide forecasts. Rather, Staff alone would develop a forecast that would then be subject to comments by any interested parties. This change to the regulations would also require a change in statute.

For the same reasons that the forecast data collection regulations may need to be modified, the data survey regulations may need to be modified. Instead of having individual market participants develop surveys for their "service areas", it may be preferable to have a statewide survey administered by a government agency.

In order for government to perform its function of monitoring price movement, regulations would need to be developed to enable government to acquire the required data and information. The Committee should consider, after all parties have had the opportunity to comment on any implication their inputs have for information needs in the forthcoming competitive electricity market, compiling as detailed a list of future data needs to be included, perhaps, as an Appendix in the adopted **ER 96**. This would be a useful step in guiding considerations of market structure as well as reform of data collection regulations.

WITNESS QUALIFICATIONS

for

RICHARD E. ROHRER

EDUCATION

MA:	Economics	Sacramento State University [in progress]
BA:	Economics	San Francisco State University, 1980
BS:	Statistics	San Francisco State University, 1980

EMPLOYMENT DESCRIPTION

Richard is an Energy Commission Supervisor I in the Demand Analysis Office of the Energy Forecasting and Resource Assessments Division at the California Energy Commission. He is responsible for the preparation, documentation and testimony to support independent Staff Demand Forecasts of Electricity and Natural Gas for utility planning areas in the state of California.

Mr. Rohrer has been an employee of the Energy Commission for six (6) years.

WITNESS QUALIFICATIONS

for

LORENZO KRISTOV

EDUCATION:

Ph. D., Economics, University of California at Davis, 1994
M. A., Economics, University of California at Davis, 1990
M. S., Statistics, North Carolina State University, 1969
B. S., Mathematics, Manhattan College, 1967

PROFESSIONAL EXPERIENCE:

Dr. Kristov is employed at the California Energy Commission as an Energy Commission Specialist (Forecasting) in the Demand Analysis Office of the Energy Forecasting and Resource Assessment Division. He has six years experience as a specialist in the power sector. Since December 1994 he has worked on several aspects of California's electric industry restructuring, including: consumer choice for retail energy services; information needs of competitive energy service markets; market power in the generation sector; and, economic impact analysis of electric industry structure. He is currently a participant in the Market Rules and Consumer Protection areas of the Direct Access Working Group, the stakeholder group charged by the CPUC with implementing its December 1995 restructuring decision. During 1993 and 1994 he worked in Indonesia on restructuring the national electric utility and developing the regulatory framework for private power projects. From 1990 to 1993 his work at the Energy Commission involved econometric and time series for several demand forecasting projects.

**WITNESS QUALIFICATIONS
for
MELINDA MERRITT**

EDUCATION:

Bachelor of Science, Political Economy of Natural Resources
University of California, Berkeley; June 1976

PROFESSIONAL EXPERIENCE:

Ms. Merritt is currently employed as an Energy Commission Specialist II (Forecasting) in the Demand Analysis Office of the Energy Forecasting and Resource Assessment Division at the California Energy Commission. She is project manager for strategic review of demand analysis data, with emphasis on existing and future energy use information needs. Previously, she was project manager for the 1994 Electricity Report and manager for Staff's Common Forecasting Methodology data collection efforts in the Division in electric utility resource evaluation, need assessment, data collection, supervision and project management.